

The Macdonald Journal

APRIL 1979



BACK THEN, MUSCLE, NOT MONEY...

was the fuel that generated farming progress. Back when prairie land was available for \$10.00 per acre, and as low as 16 cents . . . back when cleared eastern land was going for \$35.00 per acre. Back when an experienced hired man could command up to \$20.00 per month plus board and lodging . . . when a good, sound team could be had for \$150.00 in Ontario, for \$250.00 in Saskatchewan (a yoke of oxen came cheaper, about \$80.00) . . . when a 14" walking plow retailed for \$9.50, more or less . . . and when an acre plowed per team per day was a good day's work . . . back then there was little need for the complete range of farm financial services now offered by the Royal Bank.

The past 75 years have seen many changes in farming and in our ability to serve Canadian Agriculture. We're rather proud too that 'the Royal' has pioneered almost every farm financial service now available to the Canadian farmer-businessman. And there's more of the same "pioneering" yet to come . . . from the Royal Bank.

Photo: the late R. R. Sallows, Goderich
Historical data: the Research Libraries of the
Western Development Museum, Saskatoon
and the Ontario Agricultural Museum, Milton



ROYAL BANK
serving Agriculture

The Macdonald Journal

APRIL 1979

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Yellow Shafted Flicker. See page 6
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Pesticides — Pigeons vs. People.

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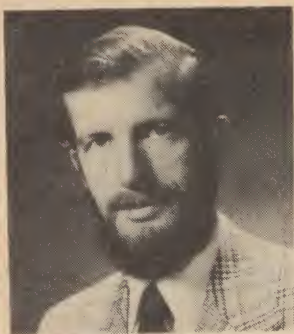
Journal Jottings

I remember "following the yellow
brick road" when I was taken as a
child to see the Wizard of Oz and
being terrified. I was reminded of
this as I followed the black drainage
tubing along corridors and up or
down flights of stairs to find happy
youngsters pressing buttons on a
computer terminal, fascinated by the
hundreds of different designs that
appeared on the screen while
overhead a laser beam slowly circl-
ed the room, lighting for a split se-
cond on another engineering "toy"
for eager young fingers. On another
floor follow a 50-foot length of string
and find out what it represents at
the other end — a tape worm in
man. The real thing was also on
display! Follow the crowd and find

yourself surrounded by greenery:
weeds, forages, a grapefruit tree, a
potted strawberry plant — you name
it; it was there. I worried a little
about the ripe, red berries and the
pot of cress nearby — a couple of
ladies thought they would fit in well
with their dinner plans. Owls and
kestrels, cascava and bananas,
chickens, before and after hatching,
baby calves, soil samples, films,
slides, photos, and pamphlets seen
and absorbed. Then follow the traffic
up to the Farm and rest your feet
while both novice and seasoned
showmen lead their animals around
the showring. All this and more was
part of the annual College Royal
which was held recently and which

Jim Feeny tells us about in his Mac-
donald Reports section. I enjoyed
my visit to the Royal, and the overall
impression that I was left with was
of the varied interests and concerns
that make up College life — both for
students and faculty. This issue is
an example of this diversification.
We have articles on animal waste
management, on bee diseases, on
birds of prey, on computers and
food processing, on an upcoming
Canadian Federation of Nature Con-
ference and, of course, on the
Royal.

Hazel M. Clarke



Editorial

Farmers Come to Macdonald to Learn

Over 25 farmers came to Macdonald College to learn about calving and heat detection in dairy herds. During the three-day course, their time was spent between classrooms, laboratory exercises and barn visits to see first hand the various aspects of reproduction problems in a herd. The professors from the Animal Science Department, Drs. Bruce Downey, James Mahone and Bernard Laarveld, quickly realized that this group was not a typical class of students. The type of questions posed by the participants reflected their experience, and their willingness to learn about the solutions to problems encountered in herd reproductions. Reproduction from the physiological and nutritive points of view were studied in depth.

The idea of this course was crystallized by a local Quebec Farmers' Association group in Cowansville. The members expressed interest in a three-day course, stressing the practical application of all topics generally encountered in reproduction problems. To implement this course, they contacted the Adult Education Division of their Regional School Board, who, jointly with the Extension Department of Macdonald College, realized the project.

This particular approach, initiated by the farmers, provided the exercise with a new twist in educational cooperation whereby the efforts of the School Board, which financed the project, were coordinated with Macdonald College, which furnished the expertise.

The course was very intensive but, despite its gruelling schedule, both students and professors found it to be a rewarding endeavour. The information that was exchanged was beneficial both to the farmers and researchers at Macdonald College. The farmers in particular commented very favourably and expressed interest in having such courses more often. No doubt, Macdonald College is ready to get together with a local Q.F.A. group and think of some useful topics for a course. The professional staff at Macdonald College has a wealth of expertise of which the farmers should take advantage.

Fairs and Others Rural Affairs

It is the beginning of another season, one that probably brings about the hopes of good and bountiful crops. But farm planning and preparation is not the only concern and activity of farmers. The many meetings that were held during the winter are now starting to bring on the fever of organizing farm fairs.

Country fairs are experiencing a new life, and their successes are well deserved. The hard work by a few conscientious individuals brings pleasure to many rural and urban persons who will visit the fairs this summer. Many farm organizations are already making plans under new leadership and old guidance, which will assure that the fairs will be sprinkled with many of the traditional rural activities. Many other rural activities warrant your support and help. The Quebec Young Farmers' Association are planning their annual Calf Rally in Ormstown on August 3, 4 and 5th. A little encouragement from parents will go a long way in providing the future farmer with his first taste of a provincial competition. It is interesting to note that some of these young competitors who, with pride and professionalism, develop a good eye to recognize calves from better herds with which they are competing. This often translates into a keen awareness of herd or farm management, which is vital for a successful farm operation. Competition encourages individuals to strive for excellence, so it is most important to encourage these young people to participate in country fairs. Support your young farmers.

Martin van Lierop,
Editor.

What's all the fuss about animal waste management?

by Professor Pierre J. Jutras
Department of Agricultural
Engineering

A few years ago, when low cost commercial fertilizers were available, animal wastes were utilized only on the farm land where they originated. Their bulky nature and relatively low nutrient value did not warrant the high transportation costs involved in moving them to land areas which could receive them. This practice has changed since the energy crisis and, although hauling manure great distances is not economically feasible, an ever-increasing number of farmers are more than happy to accept their neighbour's surplus animal waste for application on their land. Unlike commercial fertilizer, though, it is difficult to establish the nutrient content of animal manures. Because of this fact, utilizing animal waste as a fertilizer is actually incompatible with modern farming's need for precision fertilizer management. Virtually all of the guidelines now utilized for land application of manure base the tonnage per hectare on nitrogen requirements of crops as recommended for inorganic fertilizers. This approach is misleading because manures are not equivalent to commercial fertilizers.

The diversity of the nutrients in manure, the forms of the nutrients, the degree, rate and time at which the nutrients become available provide manures with characteristics completely different from those of commercial fertilizers. The composition of animal waste varies appreciably with animal species and age, feed composition and quality, manure moisture content, bedding,

cleaning compounds in wash water, and drugs.

To be of value to a farmer, guidelines for land application of animal manure should tell the farmer that if he applies a particular lot of manure at certain rates, at different times of the year, for different crops the applied nitrogen will have a certain effect on the current crop and on future crops, and that a portion of the nitrate nitrogen will be leached out to groundwater and a portion of the ammonium nitrogen will be lost to the air by volatilization before incorporation. In order to give the farmer the correct information concerning the above, the guidelines would have to take into account such factors as temperature, soil pH, moisture distribution and movement, and many others.

It is evident that no practical farmer would even begin to think in those terms. What then can a farmer do to sort out his many different crop needs, how his different soils react, and what his manure handling system can provide in terms of soil nutrients?

After studying these problems in a concerted manner for the last five or six years, agricultural engineers, agronomists, and soil scientists in many areas of the continent have now come to the conclusion that the only practical solution is for farmers to take representative samples of manure to laboratories for analysis. Coupled with **manure analysis** is a program of **frequent soil testing** on heavily manured fields to monitor soil nutrient levels. Soil testing before manure application can be a useful guide in determining the amounts of lime and commercial fertilizer needed to supplement manure.

It is anticipated that the eventual solution to animal waste management problems will involve a balanced ecological system. This means that the nutrients returned to the farm land must be in balance with those removed by the crops grown.

Nutrients in manure can be preserved by proper storage and handling practices. An added advantage of improved storage and handling procedures is a reduction in the pollution potential of animal waste. Agricultural engineers have and will continue to provide strong leadership in the animal waste management field, but it is not only an engineering problem; a multidisciplinary approach must be followed, and research and development programs are pointed in that direction.

Within the Canada Farm Plan Service, increased attention is now being given to animal waste systems that are a part of animal production buildings. Under the authority of the Canada Committee on Agricultural Engineering (one of the committees of the Canadian Agricultural Services Coordinating Committee), a "Canada Animal Waste Management Guide" was produced and is available from: Information Division
Canada Department of Agriculture
Ottawa, Ontario K1A 0C7

Copies can also be obtained from:
Department of Agricultural
Engineering,
Macdonald College of
McGill University,
Ste. Anne de Bellevue, Québec
H9X 1C0

How Much is Manure Worth?

If the nutrient value of manure can vary from one animal species to another and with the storage and handling method, how can we put a dollar value on a ton of manure? The most recent information on this subject comes from the federal agricultural research station in Ste-Foy, Quebec. They estimate that, with current N prices of \$0.56/kg, P_2O_5 of \$0.45/kg and K_2O of \$0.24/kg, solid cow manure is worth \$4.34/metric tonne (2200 lbs.); liquid cow manure, \$3.26/t; solid hog manure is \$5.98/t and liquid hog manure, \$4.71/t. Poultry manure is estimated at \$6.37/t. The above values are for manure sampled after winter storage just prior to spring spreading.

Nutrients in manure are not all available the first year of application and it can be estimated that some 50 per cent of the N, 20 per cent of the P_2O_5 and 50 percent of the K_2O are mineralized the first year and become available to plants at that time. The balance of the elements will help plant growth in subsequent years. Because of this, the actual value of farm manure is somewhat less than stated previously and the researchers estimate that the corrected values are:

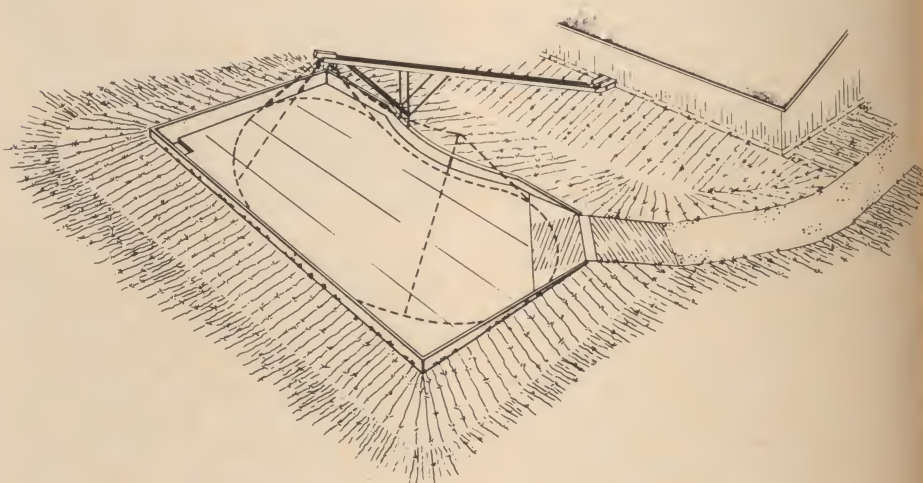
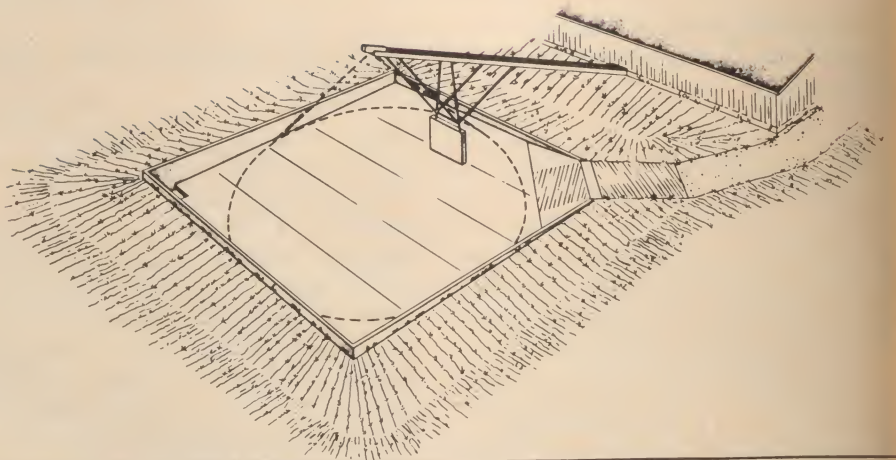
Species	Value/Metric Tonne
Cattle	
Liquid	\$3.13
Solid	2.35
Swine	
Liquid	3.30
Solid	4.26
Poultry	
Solid	4.24

Somewhat more difficult to appraise is the value of manure as a soil conditioner to improve its porosity, its water holding capacity, and its ability to resist erosion, not to mention

its content of secondary and minor elements.

The "Canada Animal Waste Management Guide" contains a

wealth of information on suitable structures and handling methods to maximize the benefits that can be derived from animal wastes, and it's free for the asking.



Curbed storage slab for solid manure with fixed stacker (above) and swing stacker (below). Diagrams courtesy the "Canada Animal Waste Management Guide."

Control of Honeybee Diseases in Quebec

by Professor V. R. Vickery
Department of Entomology

American Foul Brood (A.F.B.) has been the bane of beekeepers for many years. Old records show that honeybees were wiped out in entire districts in southwestern Quebec and southeastern Ontario. Since the 1920s, efforts were made to establish inspection services which, it was hoped, would eventually lead to detection and eradication of the disease in both provinces. The effort did result in keeping A.F.B. more or less in check, but severe losses were sustained by many beekeepers over the years.

A.F.B. attacks only the brood in the honeycomb cells, not the adult bees. Progression of the disease is rather slow. Although it is always fatal to individual larvae and pupae, a diseased colony does not usually die out until winter when the reduced number of bees makes the colony too weak to survive. Adult bees carry spores on their bodies, and honey can also be contaminated with spores. The spores are harmless to other animals but serve to spread the disease from colony to colony. The combs left in a colony killed by A.F.B. often contain honey contaminated with spores. This honey is robbed out by bees from other hives, and so the disease is spread to these otherwise healthy colonies.

Until 1978, the only practical remedy for A.F.B. was the killing of the bees of affected colonies (by gassing) and destruction of all combs by burning. Covers, supers, etc., and any wood at least three quarter inch thick, could be salvaged if scorched thoroughly with a blow torch.

The problem lies with the spore form of the *Bacillus larvae* bacterium. It can remain viable (potentially infective) for at least 50 years, and probably much longer. Keeping bees out of the area for a few years certainly does not

guarantee freedom from the disease at a later date.

Now we have something new to deal with the problem. Dr. George Cantwell and his associates of the Department of Agriculture, Beltsville, Maryland, developed the use of Ethylene Oxide (EtO) gas as a fumigant to control A.F.B. spores. In most of the fumigation chambers (and these are few in number and most are small) in the United States, a mixture of EtO and Freon gases are used in a vacuum. Over the last few years, experimentation has been carried out by officials of the Quebec Ministry of Agriculture (Mr. Bernard Levac and others) with the cooperation of Agriculture Canada in Montreal. Excellent results were obtained in eradicating the *Bacillus* spores, and equipment could be put back in service shortly after fumigation.

Following the success of the experiments, Mr. François Beauchesne, Director, Division of Apiculture and Acriculture, proposed construction of a mobile fumigation unit. The Ministry of Agriculture of Quebec financed the unit which was designed by P.-J. Bernier, agricultural engineer, who also supervised construction.

The mobile unit began service late in 1978. The truck and trailer unit is 55 feet long and has a capacity of 600 supers and combs. The system differs from the vacuum system used in the U.S. in that the fumigation is done at atmospheric pressure with the air completely replaced by CO₂. Following a conditioning period at 38°C., liquid Ethylene Oxide is added. This vaporizes and is dispersed evenly by the continuous circulation of gas in the chamber. A normal "run" takes 36 hours.

The unit is now routed to all areas of the province where A.F.B. has been found. It is the largest unit of its kind in the world used for the purpose of disinfecting bee equipment. Although other Canadian pro-

vinces have not followed our example so far, they are watching closely to determine the success of the venture.

Now for a look at the Macdonald College situation. We found A.F.B. in a few colonies during the summer of 1978. The infected colonies were destroyed and all the combs containing brood were burned. In the fall, all of the remaining colonies were killed and all of the equipment was cleaned. On Thursday, February 1, the Ministry disinfection unit arrived, and all of the equipment belonging to the College, as well as that of several other beekeepers in the area, was loaded into it. Fumigation was started that night and continued over the weekend. In spite of the seriousness of the disease, all that had to be destroyed were some brood combs with a total value of about \$110 and four colonies, worth about \$200. The Ministry of Agriculture paid the College \$155 in compensation for the loss and the equipment can be used again in 1979. Had the colonies become infected a few years earlier, the loss would have run well into the thousands of dollars. Another benefit of fumigation is that a number of other bee diseases, which are not as obvious as A.F.B. but nevertheless do decrease production, are eliminated from the equipment.

Here we have an example of foresight which places Quebec far ahead in the field of apiculture.

If disease is suspected, an authorized bee inspector should be called in to check the colonies. It is also a good idea to cut out a piece (about 5 x 5cm) of comb from the suspected area, wrap this in waxed paper then wrap securely and forward it to the Division de l'Apiculture, Complexe scientifique, 2700, rue Einstein, D1-14, Sainte-Foy, Québec, for analysis. We now have the means of controlling disease, but only complete cooperation from beekeepers will ensure that control is effective.

Peregrines vs. Pesticides

Pigeons vs. People



by Professor D. Bird,
Director,
Macdonald College Raptor
Research Centre.

The raucous wails of the five nestling Peregrine Falcons milling about in their wooden eyrie perched high atop the fourteenth floor of the hospital could easily be heard a quarter mile away. Abruptly, the clamour faded to a series of grunts and squeals, as several dead laboratory rats were slipped down the feeding tube by unseen human hands.

Peregrine Falcons on a hospital roof being fed by human parents? How and why did such a thing come to pass?

The Peregrine Falcon (*Falco peregrinus*) is practically a cosmopolitan species with up to 22 races being described from all continents depending upon your taxonomic point of view. Never in the history of man has a bird species found itself so enveloped in zealous admiration, human greed and intrigue, and political controversy. For centuries, Peregrine nests have been robbed almost fanatically by egg-collectors for their strikingly handsome cinnamon eggs. While fully-grown birds are shot, poisoned, and trapped as "vermin" by farmers, gamekeepers, and pigeon-fanciers, the young nestlings are highly prized by falconers whose in-

terest in the hunting prowess of this falcon spans thousands of years. Apparently capable of diving at speeds in excess of 200 miles an hour, trained Peregrines were traded in medieval times for a king's ransom. The Peregrine even contributed to the German war effort in World War II by unwittingly intercepting message-carrying pigeons released by shipwrecked sailors stranded in the sea. This unfortunate habit led to the signing of a government bill permitting the controlled bounty killing of Peregrines nesting in the British Isles, which severely depleted wild stocks.

Peregrine populations, however, rebounded dramatically in the face of all this adversity only to be confronted by a highly subtle, but singly devastating product of man's technology. After returning to two-thirds of their pre-war levels, a puzzling decline in British populations was paralleled by an even more disastrous situation on the eastern seaboard of the United States. By 1965, not one of more than 200 previous nesting locations of the *anatum* race yielded a single pair of breeding falcons. The high incidence of broken eggs in British eyries led Dr. Derek Ratcliffe of the Nature Conservancy to discover the one major change in the environment — the sudden widespread use of chlorinated hydrocarbons, notably DDT, for insect and agricultural pest control around 1955. Eggshells,

compared with those obtained by egg-collectors in the pre-DDT years, had thinned by more than 20 per cent, resulting in heavy embryonic mortality. Being lipophilic, biologically magnifiable, and highly persistent in the environment, this insidious poison passes from plant to herbivore to carnivore, finally concentrating in the fat stores of carnivores at the top of the food chain such as the Peregrine Falcon — and man. Since 1940, more than four billion pounds of DDT have been used world-wide, roughly 80 per cent for agriculture. DDT has now been detected in varying amounts in the fatty tissues of virtually every vertebrate species in the world today.

Although most effects are sublethal, high blood levels of DDE, the breakdown product of DDT, mobilized from fat stores metabolized during energy need, can cause a flying Peregrine to drop to the earth, dead. On June 14, 1972, after a seven-month hearing on DDT, Mr. William Ruckleshaus, Administrator of the U.S. Environmental Protection Agency, concluded that DDT had outlived its usefulness, that its risks outweighed its benefits and ordered all interstate sales of DDT to be halted by the end of 1972.

In March of 1972, two of three races of North American Peregrine, *F. p. anatum* and *F. p. tundrius*, were officially listed as "endangered" by

the U.S. Department of the Interior. The non-migratory *pealei* race of the Queen Charlotte Islands remains largely stable in numbers.

With the banning of DDT and the strict federal protection extended to these falcons, one might assume that the saving of the Peregrine is now at hand, but nothing is further from the truth. DDT is a highly stable compound with a half-life of 50 years and is still heavily used in the Peregrine's wintering grounds in Latin America. Worse yet, other relatively persistent toxic chemicals are accumulating at alarming levels in the environment.

The eventual extinction of the Peregrine being a distinct possibility, a daring recovery plan was initiated by several governmental and university institutions. The falcons would be bred in captivity and the progeny released into their old haunts. While many conservationists advocated that these large falcons could not be bred in captivity, it can now be said that the technique is an unqualified success. Since 1973, Cornell University has raised 368 Peregrines in their facilities, of which 220 have been released. The Endangered Species Breeding Unit of the Canadian Wildlife Service, based at Wainwright, Alberta, is now producing close to 40 falcons per year for release projects. Elsewhere, many private breeders in Saskatchewan, Alberta, British Columbia, and Germany are enjoying reasonably good success.

The raptor research program at Macdonald College was begun in 1972 with the intention of breeding Peregrines in captivity for release into eastern Canada. Unfortunate delays in obtaining breeding stock from northern Quebec and a reluctance to duplicate already existing efforts led to the creation of a unique and thus far successful research philosophy. Common raptorial species such as American Kestrels (*Falco sparverius*) and Red-tailed Hawks (*Buteo jamaicensis*), readily available from many sources including zoological parks, are being used experimentally to provide a



Director David M. Bird compares the sizes of the Centre's two main research species, the Peregrine Falcon and its smaller cousin, the American Kestrel on the left.

wealth of data concerning raptor biology. This is reflected by a growing list of publications dealing with reproductive physiology, nutrition, genetics, toxicology, behaviour, ecology and wildlife management (see Macdonald Journal, June 1976). With the expertise and resources available, Macdonald College, is a natural location for such a research program.

The American Kestrel offers many possibilities as a laboratory research animal. The effects of this domestication are being investigated by establishing a wild kestrel colony in the environs of Macdonald College for comparative research and testing of management techniques. Using the already existing population as a base, Centre personnel have erected artificial nest boxes, two of which have produced a brood of kestrels. In 1978, 42 banded captive-bred kestrels were experimentally released for a total of 65 released birds in the last three years. At least two have been recruited into the local breeding population.

The Macdonald raptor research program has expanded recently with the hiring of a full-time Director in July 1978 and the more recent hir-

ing of a full-time keeper. A meeting with government officials in October 1978 revealed much concern for the northern breeding *tundrius* race of Peregrine. It was unanimously agreed that McGill University could play a key role in this subspecies' survival by maintaining a captive population for breeding studies. The Centre at present retains 14 *tundrius* falcons, comprising six pairs.

Thanks to the Wainwright breeding facility of the Canadian Wildlife Service, the Centre has already been fortunate to participate in the Peregrine Falcon reintroduction program. Each year since 1976, Centre personnel have experimentally released young Peregrines into the College area. Why Macdonald College and not some towering cliff overlooking a lake or river in a pristine wilderness setting? The truth is that the College offers all the necessary elements required to support at least one pair of breeding Peregrines — a suitable nest site affording protection from inclement weather, predators, and disturbance, and an adequate prey base all year around.

The "cliff" in this case is the fourteen-storey Veterans' Hospital in Ste. Anne de Bellevue, a prominent

feature in the landscape for miles around. Two wooden ledges have been constructed on the east wing of the hospital, one for the actual release site and the other as a feeding and, we hope, future nesting site. Some readers may recall the famous Sun Life falcons of Montreal. For 16 years, beginning in 1936, a female Peregrine took up residence on the Sun Life Assurance Building, outliving three mates and producing 21 baby falcons. (For details, see *Great Moments in Action . . . The Story of the Sun Life Falcons* by G. Harper Hall, 1955, reprinted by the Province of Quebec Society for the Protection of Birds.)

Other cities adopted by wild Peregrines include New York, Philadelphia, and, more recently in 1978, a Cornell-released Peregrine has taken up residence in Baltimore.

Pigeons are an excellent food source for Peregrines, but some concern has been registered over whether city-dwelling pigeons feeding at street level may contain high levels of lead and other contaminants which could in turn poison falcons feeding on them. Fortunately, for the Macdonald release program, several pigeons analyzed by the Toxicology Division of the Canadian Wildlife Service were found to be quite free of environmental contaminants.

As early as 4500 B.C., man has bred the pigeon as a food source, but increased food production through modern agricultural practices led to the release of captive flocks and their proliferation into a highly successful feral species. Through the decades, the pigeon has had its share of human admirers and foes. Other than their graceful flying ability and their provision of entertainment for Sunday afternoon park-dwellers, there seems really little defense for allowing their populations to mushroom out of control. They are not eaten to a significant extent by human or wildlife predators (at least, not yet!) nor do they provide any measure of excite-



The American Kestrel, numbering over 150 in the Macdonald colony, is easily bred in the laboratory.

ment for the keenest of birdwatchers.

Previous censuses in 1974 have estimated the Macdonald College population to be upwards of 1,200 birds with recruitment from equally large neighbouring populations. The West Island area probably supports a population of more than 5,000 birds. Unchecked by predators, they seem to breed all year round, or at least 10 months of the year, having been seen copulating in mid-winter. The cement buttresses and eaves of the College buildings provide a haven for nesting and roosting birds. And where else could one find such a constant copious food supply as the grain and fecal material furnished by the farm's feedlots, storage bins, and fields, as well as the spillage from railway cars shuttling to and from Montreal. The unsightly mess on the campus resulting from accumulating pigeon droppings, the loss of cattle feed in excess of \$2,500 per year, and the possible transmission of disease, e.g., salmonella, histoplasmosis, to humans, certainly make a strong case for pigeon control.

One or two pairs of Peregrines nesting in the vicinity of Macdonald College might offer some control over pigeon numbers. While the actual killing of pigeons by Peregrines for food would not likely result in a severe population drop, the appearance of a resident pair of highly skilled predators might make Macdonald College less appealing to some pigeons. A hunting Peregrine would certainly disrupt the pigeons' daily patterns of "feeding and breeding".

Releasing captive-bred falcons is a time-consuming effort. The "hacking" method consists of placing 30-day-old nestlings, usually five, in the wooden shelter with a barred front, on the hospital roof. Food in the form of dead rats, chickens, and pigeons are provided for the young falcons by unseen hands. At the end of three weeks, the bars are removed and the falcons generally vacate the artificial eyrie on that day, but remain in the area for three to four weeks, developing their flying and hunting skills. Food is supplied to them by Centre personnel during this crucial stage. With some exceptions, parent falcons do not teach

their young to fly or hunt, but they do supply food to the fledglings until the necessary skills are acquired to become independent. Frequently, our young Peregrines have been observed attacking pigeons in high-speed tail chases, but unless the falcon was able to dive from above and behind, the chases were usually fruitless. One of the Macdonald-bred released kestrels found a more successful method of hunting pigeons, as it was observed raiding pigeon nests in search of young squabs.

A total of 13 banded Peregrines have been released from the hospital site since 1976. One female released in 1976 survived until April 1977 when it was shot to death in North Dakota. Another bird wintered in the College area in 1976-77. Of the remaining 11 falcons, nothing is known, except that reports are received regularly of Peregrines sighted in Montreal and its environs. Some success has been achieved with other release projects. Several Peregrines have returned as adults to their former release sites in the States, while at least two Canadian Wildlife Service birds released in the West by fostering to wild parents have returned as adults to successfully produce young falcons.

Wild raptor populations suffer a post-fledgling mortality of 70 to 80 per cent during their first year, and some biologists have suggested a mortality rate of 90 per cent for captive-bred birds released into the wild. Multiple releases of falcons in the same vicinity have proven successful for the experimental kestrel release program and may hasten the establishment of a breeding pair of Peregrines, which generally mature after three years to join the breeding population.

Why should one care about the survival of Peregrine Falcons and other birds of prey? Apart from their obvious roles in the ecology of wildlife populations, birds of prey share the top of the food chain with mankind and are among the first wildlife species to exhibit the drastic effects of toxic chemicals accumulating in



Nine years old this spring, this female *tundrius* Peregrine laid four fertile eggs in 1978 via artificial insemination.

our environment. Thus, they can act as effective barometers of environmental degradation.

Birds of prey lend an aesthetic beauty and variety to the earth and provide enjoyment for a growing number of birdwatchers and naturalists. Compare, if one must, the Peregrine Falcon or any wildlife species to some priceless art treasure. Once it has disappeared from the face of the earth, it can never be recreated.

Through its intensive raptor research program and its value as a release site for Peregrine Falcons, Macdonald College of McGill University is lending its expertise and resources to both the search for knowledge of raptor biology and the struggle to preserve these awe-inspiring birds in their wild state.

We are grateful to R. Fyfe and J. A. Keith of the Canadian Wildlife Service for their continued interest in Macdonald College as a Peregrine release site. Many volunteers, paid staff, organizations, and kind donors have contributed enormously to the

raptor research program at Macdonald College, and it is to these people that I dedicate this article.

The Journal cover is a black and white reproduction of a limited edition (1,000 signed and numbered) full colour print, 22" x 30", by artist Anthony Tye. The original painting was done specifically to help fund the peregrine research program and prints may be obtained for a minimum amount of \$50. each (signed only, \$35.), tax deductible except for the \$10 production cost of the print. If you do not wish to receive a print but would like to make a contribution to the program, all donations will be greatly appreciated (and tax deductible). For more information on either the limited edition or the program, please write to:

"Save the Peregrine Fund"
c/o Dr. David M. Bird
Macdonald Raptor Research Centre
Macdonald College of
McGill University
Ste. Anne de Bellevue, Que.
H9X 1C0.

Macdonald Reports

by Jim Feeny

Computer Canning Tastes Good!

Anyone the least bit familiar with country living realizes that nothing beats fresh out-of-the-garden produce. Fruits and vegetables that come directly from the field or orchard seem to have that intangible "something" that processed foods from the corner store often lack.

Well, that "something" may not be as intangible as you think. Researchers are looking for, and finding those components of foods that give each its distinctive flavour and nutritive value. Once these compounds have been identified, the challenge is to preserve them, especially during food sterilization.

Sterilizing food basically consists of heating the food to a high temperature so that harmful microorganisms that can lead to food poisoning are destroyed. The problem is that it also destroys some of the food constituents that the processor — and the consumer — would like to see retained. Macronutrients such as proteins, fats, and carbohydrates don't usually suffer too much; the same applies to most minerals. However, many vitamins and most of the compounds that give food its flavour are heat soluble. This means that the longer the food is subjected to the sterilizing heat, the more damage is done to these substances. The food ends up neither as tasty nor as nutritious as it started out to be.

It is easy to see the food aspects of the problem. The food components (vitamins, flavour compounds, etc.) must be identified, and the researchers must select those which are important. For example: in apple juice (more on this topic later), there are some 128 naturally-occurring flavour compounds that have been identified. Roughly 20 of these are thought to play an important role.

But there's more than food science involved. Machines and mechanical techniques are used to process food. This is where the engineering part of the problem comes in: how to design machines that will process food so that nutrient and flavour losses are as small as possible.

Dr. Robert Kok, a professor in the Department of Agricultural Engineering at Macdonald is working on apple juice sterilizing procedures. He is studying the present technology of juice sterilizing, looking at the performance of each with respect to the losses mentioned above. He hopes to find a basic process that will best suit the needs of Quebec's apple juice industry. Once a basic process has been chosen, he will use a sophisticated technique called "computer modelling" to determine how the basic process can be modified. The objective is to come up with a procedure that is best in all respects: safe sterilization, minimum flavour and nutrient loss, minimum energy use, and so on.

If an engineer had been working on this problem just a few years ago, his first step would have been to build a small-scale mechanical model of the plant system he wanted to study. If the model worked, and if an apple juice processor had been interested, the system would have been expanded to industrial capacity and installed in a plant. Both the engineer and the manufacturer would then pray that a system that efficiently processed a few gallons of juice per hour would work just as well when a few thousand gallons went through it in the same period.

Dr. Kok uses models in his research, too, but his models are mathematical in nature, not mechanical. He says that all of the steps used in juice sterilization can be translated into mathematical equations. Certain equations will describe the behaviour of the juice

as it is heated, and this equation can be modified to take into account how fast the heat is applied. Another equation may describe the effect of the diameter of the pipe the juice flows through during sterilization. Even the air temperature outside the processing plant can be plugged into the expression.

There are many factors to be considered. Dr. Kok says that the art of computer modelling is to decide which of these are important, and then to derive the right equation for that factor. Of the factors listed above, for example, one can safely assume that the air temperature outside the plant does not have that great an effect.

All of the proper equations are combined to create the mathematical model. This model is actually a computer program that describes the over-all juice sterilizing process. The program is written so that a researcher who wants to see the effect of changing a step in the sterilizing process doesn't have to build a mechanical model; he only has to change one or more of the numbers in one of the equations on the computer program. If his equations are correct, and his program is written correctly, then the model will accurately forecast the effects of the change.

When Dr. Kok told me this, I wondered how the researcher knows whether or not his model is the right one. The professor replied that the researcher must rely on his observations here. The equations must give results that are as close as possible to real life. For example, if you have an equation that predicts that decreasing the diameter of the pipe the juice flows through during sterilization means that more heat must be applied over a longer period of time to sterilize the juice, then you know you have a bad equation. Commonsense — and practical experience — says that decreasing

the diameter of the pipe should result in the juice's being heated to the same temperature in a shorter period of time by less heat. Another example Dr. Kok gave me was the Roman arch, used in buildings and water-ways. The Roman arch can be described by a mathematical equation: a model. Since Roman arches have lasted thousands of years, the model is obviously an accurate one. In other words, if the model works, it is a good one. And if the model's predictions are sensible, it's likely a good one.

Once the researcher has a model that he is confident in, the actual experiments can begin. Dr. Kok told me that computer modelling of the type described above decreases the number of laboratory trials needed by a factor of 10. If a researcher thinks that modifying a particular factor will bring favourable results, he has only to change some numbers on the computer program. He doesn't have to build a mechanical model of the system.

If the computer predicts that the results will be unfavourable, then the researcher will go no further with that theory. If the computer predicts spectacular success, then the scientist can go ahead and design an actual physical model of the process to test it.

One can see the economy of effort here. Proper use of the computer model results in a great reduction in the number of non-productive experiments on real equipment. The researcher has been warned away from the dead ends by the computer.

Dr. Kok's work with apple juice sterilizing is still in the preliminary stages. He's now collecting information on the many different processes used and is deriving the equations to describe these mathematically. We hope to present his results in a future issue of the Journal.

NATURE FEDERATION TO MEET AT MAC

Macdonald College will be the site of the 1979 Annual Meeting of the Canadian Nature Federation from May 28 to June 3. The meeting will be hosted by the Quebec Society for the Protection of Birds.

Two members of the Macdonald Faculty are members of the Society: Professor Roger Titman and Professor David Bird. They and their colleagues in the Department of Renewable Resources are very much involved in the organization of this year's meeting, and are planning to make extensive use of the facilities for nature study and observation at Mac and in surrounding areas.

Field trips and expert guest speakers will be featured at the Annual Meeting. Some of the guest speakers will be Macdonald staff members: Dr. Roger Bider speaking on his work with Quebec caribou, for example. Other speakers will be brought in from the "outside" — very literally speaking, in this case! Snow geese of the Arctic, an ecologist's view of southern Quebec's vegetation, and marine mammals are just a few of the topics that will be dealt with during the meeting.

The probable highlight of the meeting will be its field trips. Twenty-two of these are being offered, ranging from bird-watching on Campus to six-day cruises down the St. Lawrence River stopping at naturalist sites along the way. A three-day field trip to watch whales and visit seabird colonies near Rivière-du-Loup is also being offered. Closer to home will be tours of urban parks in the Montreal area, trips to Mont Tremblant, the Eastern Townships, the Mont St-Hilaire Nature Reserve, and an overnight canoeing trip north of Mont Tremblant. The objective of each of

these is to observe specific aspects of the environment.

Everyone is welcome to attend the Canadian Nature Federation Annual Meeting. The pre-registration fee is \$25 (\$30 if you register at the door), and there is a reasonable charge for most of the field trips. It should be a great opportunity to learn about what's all around us!

More information on the Annual Meeting can be obtained from Ms. Brooke Wright, 9 Springfield Avenue, Westmount, P.Q. H3Y 2K9.

A Real Royal Event

Hundreds of visitors toured the College on the first weekend of March at the Annual College Royal. This year's open house was the most successful in years, largely due to a real desire on the part of students and staff to show off their new facilities in the Raymond, Macdonald-Stewart, and Barton Buildings.

It turned out that the exhibits matched their surroundings: both were impressive. Displays were numerous and comprehensive, and CBC farm broadcaster Marc Côté (who was one of the exhibit judges) commented on the display attendants' knowledge of their material.

The College Royal had been held in the autumn for the past few years, but the student organizers decided to switch it back to its traditional early spring dates this year. One of the reasons for this was to enable the Livestock Show to once again become part of the Royal. This was a wise move, as the combination attracted great crowds. The press of people in the Dairy Barn was so great on Saturday afternoon that it was often difficult to move the animals in and out of the Show Ring. It all made fine material for the crew from CBC Ottawa which filmed the

(Continued on page 16; photos page 12 & 13)



One of Saturday's Showmanship classes. In the foreground are two Diploma students: Laura Johnston of Richmond and Callum McKinven of North Hatley.



Part of the first place Academic Exhibit: Teresa Zabek's presentation on the development of chicken embryos.



Above: The Livestock Show Judges were obviously impressed by the quality of the Show. Professor P.Y. Hamilton, left, Registrar of the Nova Scotia Agricultural College, and Jim Houston, Assistant Director of the Macdonald College Farm. Right: Some details of the second-place Academic Exhibit by the Agricultural Engineering Department. Visitors are grouped around a computer terminal that was programmed to generate various designs.



The Department of Plant Science Exhibit was located in the main lobby of the Raymond (formerly the Agriculture) Building. This photo also shows the new location of the War Memorial Arch and Clock.





Though the Royal is a student event, it would not be possible without the active participation of the College staff.



Professor Hamilton carefully perusing the animal shown by Lorraine Cohen who went on to win the Novice Showman Championship.



Livestock Club President Joanne Enright presenting Jim Houston with a memento in recognition of his many years' service to students. Shortly after, the tables were turned when Joanne was presented with the Jim Houston Award for Outstanding Student Contribution to the Livestock Show.

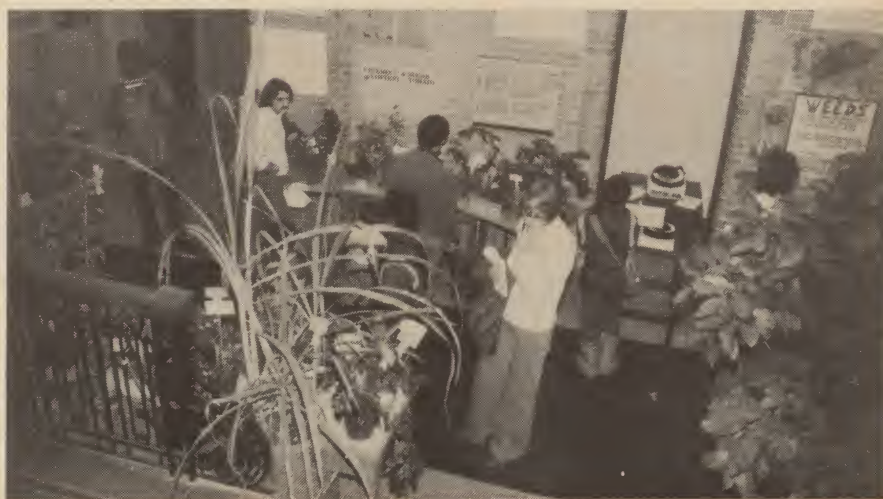


Shown above are some of the exhibits that were located in the lobby of the new Macdonald-Stewart Building. The Raptor Research Centre Exhibit, to the right of the above photo, was selected as best non-academic exhibit.

Right: Another view of the lobby of the Raymond Building, showing the extent of the work the students put into their displays at the 1979 Royal.



Final-year student Tom Ladd, left, is explaining a feature of the Soil Science Display to Exhibit Judge, Marc Côté, farm broadcaster on CBC's Radio Noon.



The Family Farm



Published in the interests of the farmers of the province by the Quebec Department of Agriculture.



PRESERVATION OF AGRICULTURAL LAND

Because of the nature of its provisions, the Act to preserve agricultural land came into force on November 9, 1978. Its aim is to preserve, for agricultural purposes, all land whose biophysical nature and climatic location make it suitable for farming and, at the same time, to control its subdivision and parcelling out. La Commission de protection du territoire agricole

du Québec is responsible for the application of the Act.

Geographical region

At present, the Act to preserve agricultural land applies to a well-defined geographical territory, namely, a **designated agricultural region** comprising 614 municipalities located in the

lowlands of the St. Lawrence and Ottawa rivers.

Each of these municipalities has been assigned a **reserved area for control purposes** whose boundaries are shown on provisional plans deposited at the municipal secretary's office and at the registry office of the registration division. These plans constitute a basis for negotiation between the municipality and the Commission with a view to



the establishment of the **permanent agricultural zone**.

Restrictions

For the time being, the Act applies only within the reserved area for control purposes and, as soon as a permanent agricultural zone has been established through negotiations with a municipality, application of the Act will be restricted to that zone.

Thus, in a **reserved area for control purposes** or in a permanent agricultural zone, the following restrictions apply:

1. It is forbidden to use a lot for a purpose other than agriculture. Construction of residences and streets is therefore forbidden, but authorization to erect buildings intended for an agricultural operation is maintained.
2. It is forbidden to break up a lot through parcelling out or subdivision. The sale of a lot to more than one person is prohibited.
3. It is forbidden to dismember a block of adjoining lots. Thus, an owner cannot sell a lot if he retains ownership rights over an adjoining lot. For the purposes of the Act, two lots separated by a public road are considered to be adjoining.
4. Maple groves are specifically protected by the Act. Consequently, it is forbidden to cut down trees in a sugar maple grove, except for selection or thinning for silvicultural purposes.
5. It is forbidden to remove arable soil for purposes of sale unless a permit issued by the Commission de protection du territoire agricole du Québec has been previously obtained.



The Act stipulates that a municipality may not issue a construction permit and that the ministère des Terres et Forêts may not authorize the subdivision of a lot in contravention of the provisions of this Act.

To obtain a permit issued by a municipality concerning a lot, the owner must prove that he has signed and transmitted a declaration to the effect that his project does not require the Commission's authorization or that he has obtained the said authorization.

Privileges recognized by the Act

Notwithstanding these prohibitions, the Act to preserve agricultural land recognizes that owners of lots included in the **reserved area for control purposes** of a municipality or in the **permanent agricultural zone** have the following privileges:

1. The owner of a vacant lot acquired under a title registered on or before November 9, 1978, may erect thereon a single residence and use, for that purpose, an area not exceeding half a hectare (53,819 square feet). The owner of a number of vacant lots in the same municipality may erect only one residence on his lots.

This privilege expires after five years, that is on November 9, 1983.

2. Any person whose principal occupation is agriculture may erect, on his land, residences for himself, his children or his employees. This privilege is permanent, but these residences may not, without the Commission's authorization, be sold separately from the farm nor result in parcelling out the land on which they were erected.

On the other hand, an owner may at any time sell a lot or all his lots if such transaction does not entail breaking up an existing lot or dismembering adjoining lots.

These restrictions are not absolute because the Commission may authorize, under certain conditions, the use of a lot for a purpose other than agricultural.

Vested rights

The Act to preserve agricultural land recognizes vested rights for non-agricultural uses authorized on November 9, 1978.

Consequently, all buildings or immovables already erected before this date benefit by a vested right. This also applies to the buildings or uses authorized by a utilization permit issued before November 9, 1978. In such cases, the Act works as though it did not apply to the area so used. Thus, among other things, a farmer may, at the time of sale of his farm, keep his residence. The reverse is also possible.

Moreover, the Act provides for the extension of these non-agricultural uses, without authorization by the Commission, to up to half a hectare when the immovable is used for residential purposes and to up to one hectare if the immovable is used for industrial, commercial or institutional purposes.

The Act also stipulates that a vested right applied to any lot which is or becomes contiguous to a public road along which public water and sanitary sewer services are already authorized by a municipal regulation adopted before November 1978.

This right applies to an area not exceeding half a hectare if the lot is to be used for residential purposes and to more than one hectare or five times the area occupied by the buildings, whichever is less, when the lot is to be used for commercial, industrial or institutional purposes.

In this case, the part of the lot used for residential purposes must not extend, in depth, to more than 60 metres from the right of way of a public road, and in the case of a lot used for industrial, commercial or institutional purposes, this restriction now extends to 120 metres.

Municipal regulations

It is important to note that any person who obtains a permit or an authorization from the Commission is not thereby exempted from requesting a permit issued under a regulation of the government or of a municipality. This obligation applies, among other things, to municipal regulations on parcelling out, construction and zoning.

Application for authorization

No interdiction stipulated in the Act is absolute. The Commission de protection du territoire agricole du Québec may, in fact, authorize uses for a purpose other than

agricultural. Authorization applications forms are available at the following places:

- at your municipal secretary's office;
- at the local and regional offices of the ministère de l'Agriculture;
- at the offices of the Commission de protection du territoire agricole.

At present, these duly completed forms must be sent to the Commission's head office. Once the permanent agricultural zone of a municipality has been established authorization applications concerning it must be sent to the municipality. The municipality will then have 30 days to recommend that the Commission approve or reject the project.

Non-compliance with the restrictions stipulated by the Act may entail fines or orders cancelling certain deeds and compelling offenders to restore the premises to their former condition.

To obtain any additional information, you may communicate with your municipality or with the Commission du territoire agricole du Québec: Tel.: 1 800 462-5341 (no charge). (418) 643-3314 (Québec).

Commission de protection du territoire agricole

Head Office: 200 chemin Ste-Foy, 2e étage (Québec), 643-3314; Montreal Office: 201 est, Boulevard Crémazie (Montréal), 873-6793.

(Continued from page 11)

proceedings for their "Country Life" show.

The Royal brought back many of Mac's old friends, but none was more welcome than Professor Peter Hamilton. Professor Hamilton is now the Registrar of the Nova Scotia Agricultural College in Truro, but he held a variety of posts at Mac not so long ago. He was very pleased to accept an invitation to be one of the judges at the Livestock Show, and took advantage of the opportunity to visit old friends and new surround-

ings at Mac.

It was also a special time for the other judge of the Livestock Show. Jim Houston of the College Farm is retiring later this year, and the students presented him and his wife Polly with special gifts commemorating their years of service to the student body.

Walking around the College during the last few hours of the Royal on Sunday afternoon, I noted a remarkable number of smiles —

tired ones, perhaps, but broad enough anyway. Staff and students had passed through a very busy three days, but the general feeling was that it had been more than worth-while. The fact that the College's future is assured seems to have translated itself into a sense of purpose among the students and staff at this year's Royal. Everyone thought that Mac had something to show the public, and they did their best to carry it off. And their best turned out to be the best Royal in a long time.

FWIC News: Adelaide Hoodless Homestead Foundation Fund

The Hoodless Homestead Foundation Fund was established by the National Executive on recommendation of the Homestead Committee, as a special project on the occasion of the 60th anniversary of the Federated Women's Institutes of Canada.

All members and friends are invited to make a personal gift of one dollar (or more) making the Foundation Fund sufficient to maintain the Homestead in a manner befitting our national museum.

Names of donors and amounts donated will be recorded, province by province, in a special Adelaide Hoodless Homestead Foundation Fund Register, and kept at the Homestead.

Provincial units are challenged to use their ingenuity and communication skills to get their anniversary gifts together for presentation by their Presidents at a special dedication event at the National Convention in Saskatoon.

CanSave (Part II)

In my first article (Macdonald Journal, January 1979) I outlined the history of the Canadian Save the Children Fund (CanSave) and promised a further report on some of the work now being done. The original emphasis on disaster relief — though emergency aid is still available — has been replaced by programs of self-help in such areas as nutrition, preventative medicine, and community development in more than 30 countries. The words "self-help" are important. It is the people in the country concerned who decide what project is essential and, under the help and guidance of



Starting the pot boiling: the FWIC with their contribution to the Adelaide Hoodless Homestead Fund. Left to right, standing, Mrs. M. McAlpine (N.B.), Mrs. W.H. Warren (Man.), Mrs. H. Noblitt (Ont.), Mrs. J. Robertson (Que.), Mrs. M. Reeves (P.E.I.), Mrs. J.J. Laracy (Nfld.), Mrs. W.E. McArthur (B.C.). Seated, Dr. J.A. McLean, Past President (N.S.), Mrs. J. Bielish, President (Alta.), Mrs. E. Oddie, President-Elect (Sask.).

CanSave, carry through with that project, be it long- or short-term.

As an example of both immediate and long-term assistance, last year CanSave, along with other organizations, provided emergency funds in war-torn Lebanon where thousands of children had been left homeless. Many of these children had lost contact with their families. A mobile health clinic and medical supplies were provided, and CanSave is now concentrating on reconstruction and development projects in two specific Lebanese areas.

Training for the construction of earthquake-resistant buildings is being given in Guatemala. Courses in midwifery (see letter following this article), experimental forestry, and the marketing of local handicrafts are also being undertaken in that country. Road building, cottage in-

dustries, the formation of co-operatives, and agricultural improvements have been initiated in 15 Korean villages. CanSave supports the Model Basic School Training Centre in Jamaica, the Child Welfare Training Centre in St. Vincent, and the University of West Indies Regional Child Development Centre. A home-visiting program in the Windwards stresses the importance of nutrition, hygiene, child care, and family planning. The list of projects and the list of countries could go on with the programs varying depending upon the needs. Here in Canada, for example, clothing, toys, and blankets are sent to native people in Northern Ontario and Labrador. There are hot lunches for children in the mercury-polluted Grassy Narrows and White Dog Reserves. In Canada, CanSave works with and through existing local and national

agencies. The Vietnamese "boat children" whose families settled in the Toronto area, received sweaters, toques, and mittens donated to the Ontario Welcome House by CanSave.

Who Supports CanSave? CanSave relies heavily on the individual who gives either time or money. Volunteers are always welcome and their services are many and varied. As one example: many stuffed toys are sent in, and volunteers in the National Office in Toronto will make faces for those that need them, using either felt or embroidery as buttons cannot be used. CanSave campaigns for financial aid in February and volunteers help man Valentine trees set up in different centres. This year Anne Murray put the first Valentine on the tree in Toronto — Miss Murray is the National Chairman for CanSave for the year, this being the International Year of the Child. Guy Lafleur did the same in Montreal and Bobby Hull in Winnipeg. An ordinary bare tree — often a birch — is set up and passersby are asked to buy a Valentine, which they may sign, and pin it on the tree.

As members of the WI are well aware, CanSave used to ask for handi bags to be packed for children. As the postage for mailing bulk parcels is prohibitive, this has been dropped and cartons containing such items as colouring books are now shipped directly to a country where field workers supplement these items with others — soap, face cloths — and distribute them. Many of those that filled handi bags are now sending in cash donations for material aid instead. Some of this money may go to buy wool for the countless knitted articles that are needed each year. Many, on the other hand, supply their own wool. This year there is a special need for cardigans and pullovers in all sizes, baby sets, and slippers.

Of the many knitted articles that are received, the best ones are kept aside for sale in the CanSave store in Toronto. This adds to the coffers as does sales from a booth at the Toronto Exhibition. Then, too, there are Christmas and occasional cards and dish towels for sale.

Some Girl Guide groups have volunteered to make the stuffed toys and many WI members are teaching

the girls how to make them. Individuals and groups may sponsor a child for \$144 a year. As many countries do not have free or compulsory schooling, sponsoring a child means that he or she may receive an education and thus become a vital link in CanSave's self-help philosophy. A fairly new sponsorship plan is COPE where you not only sponsor a child until he or she is educated but also the community receives help as well. They might build a school or a new road to get to the school. The West Island WI is sponsoring a child through the COPE plan, and many other branches have sponsored children through the years.

The Canadian Save the Children Fund has been assisting children for nearly 60 years. Its work is based on the Declaration of the Rights of the Child drafted in 1923 by Eglantyne Jebb, founder of the world-wide Save the Children movement. This Declaration will be the focus of all work by CanSave on behalf of children during the International Year of the Child — 1979.

Mrs. Lucy French,
Provincial Convener of Citizenship.

Maria Castro now holds a Guatemalan Ministry of Health card identifying her as a Trained Government Midwife. The following are excerpts from Maria's explanation of how the three-week midwife training course, operated jointly by the SCF Alliance and the Ministry of Health, will enable her to give better treatment to her patients.

"I live on the edge of town near the Health Centre in a wooden hut I built myself after the earthquake on the 4th February. I live there with three of my four children. The eldest boy is married; the boys at home are three and nine years old and the little girl is four. My other son, who was 12 years old, died in the earthquake when our house was carried down the mountain slope and half buried under the land fall . . .

"I also had five other children over the years, all of whom died in infancy, one from measles, two from fevers and two from diarrhoea.

"I began working as a midwife two years ago to earn some money to support my children after my husband left me to go and work in the

Peten, in the north of Guatemala.

My mother was a midwife and she taught me. I charge 5 Quetzales (U.S. \$5) for my services, which involve several visits during the last few weeks of pregnancy, assisting at the birth and making daily visits for the following week. I also get my meals while I am at the house. I had never heard of training courses for midwives until Haroldo, the Rural Health Technician, invited me to attend this course. He told me he got my name from Municipal birth records.

"I am 30 years old, which is a good age for a midwife, as you have to be old enough to be respected by the villagers and yet young enough to make the long walks to remote houses. You also have to be strong to help the mother during the birth . . .

"The training course was very interesting and enjoyable and I learnt many new things. I am happy that I can now give better treatment to my patients . . ."

Cornhusk Dolls

It seems so appropriate for rural women in corn-growing areas to learn the art of making cornhusk dolls. **Dewittville** WI members Mrs. Rogers and her daughter, Debbie Rennie, helped every member at a recent meeting make "a little lady." The dolls were made completely from cornhusks — no other materials were used. Even the hair is fashioned from cornsilk! Husks are prepared by bleaching and then are worked when damp. Members were also given a few ideas for cornhusk flowers to be used in dried flower bouquets.

A member of **Inverness** WI has been a foster parent for a number of years. With this being the Year of the Child, a letter received from Mrs. Mimnaugh's foster child Noel, who lives at Dr. Graham's Homes, West Bengal, India, was sent to us by the branch.

"Dear Mrs. Cora Mimnaugh,

"First of all I must begin by wishing you a Merry Christmas and a Happy and most prosperous year for 79. I have enclosed a card and I hope you will like it. It is about a picture of a Tibetan lady making special tea. The tea they drink is something like

soup. In a pot of boiling water some tea leaves are added and are allowed to boil for quite some time. The liquid is then strained and transformed into a tall bamboo container. A generous amount of butter is added and salt to the taste. This is then churned vigorously for ten to fifteen minutes with a long wooden pole till the tea turns whitish and frothy. Then it is poured into clay or aluminum tea pots and heated over a slow fire. The tea is now ready for drinking. I have drunk some of this tea and it tastes most splendid.

"I am very fine in the school and the cottage along with my other friends.

"I am studying very hard for the final examination which will be held in the middle of next month. I hope I will pass and go to class 8. The school will be closing for the winter holidays on the 29th November and shall be opening on the 27th Feb. 1979.

"I must end this letter by wishing you once more a Merry Christmas and a Happy New Year."

Yours sincerely
Noel (Monteiro)

Dear WI Members,

When this is in print, winter will have really lost his cold grip on us. April winds are soft and full of promise, nesting birds are looking for building material, children are trying out new rubber boots, and the land is almost ready for our farmers.

More branches held meetings in February than in January. Some mention thank you notes read for gifts and cheer boxes sent at the Christmas season such as **Canterbury, Hemmingford**. Others tell about Valentine greetings exchanged: **Spooner Pond, Melbourne Ridge, Granby Hill**. At the **Jerusalem-Bethany** branch meeting, the education Convener, Mrs. A. Hammond, commented on the deplorable conditions the young native children in the far North are experiencing due to a parental alcohol problem. Since this is the Year of the Child the members wonder if we (the W.I.) could assist in some way. The guests at this meeting, Mr. and Mrs. George Connelly, took them on a delightful trip to Holland, Germany, France and the British Isles. The commentary

was most educational while the photography was excellent.

Dalesville Louise branch enthusiastically made plans to serve lunch to the Brownsburg group at their annual meeting in March. The Health Convener chose as her motto: "Tis not enough to help the feeble up, but support him after," and for the roll call was "Bring in old glasses for underdeveloped countries." This, along with the fact that it was white cane week, made it very appropriate that she chose Mrs. Phyllis Stevens as guest speaker. Mrs. Stevens told about the White Cane Club with which she was associated for many years. She praised very highly the work that was done by the late Tony Zapliski, organizer of the Club, who himself was blind. She told not only of little personal visits made to the homes of these blind people, which covered the County of Argenteuil, both French and English, but also of the work done by their Women's Auxiliary, the entertainment organized for them, and said how she marvelled about their enthusiasm, e.g., a trip to Ottawa at tulip time and to see Parliament, even though blind. This all was voluntary work under the C.N.I.B. and the help of others such as the Lions Club.

Frontier was pleased to have County President, Mrs. K. McCaig, as guest this month. A pamphlet was brought to the meeting showing the picture of a sheepskin pad that was purchased for a double-leg amputee. This was from proceeds of a silver collection at Christmas for a needy person in the community. It was greatly appreciated by the recipient. The roll-call, Bring a written helpful hint was answered by 24 members and guests. Some were: Ballpoint pen marks on clothing can be removed by first applying hair spray, then washing out with soap and water. When painting, up to two tablespoons of vanilla added to a gallon of white paint will eliminate the odour and not change the colour. Cornstarch added to water when washing windows will leave them sparkling. Dorothy Heatlie, in charge of entertainment, gave a great deal of information on St. Valentine Day and how it is celebrated in other countries. It is believed to have started with St. Valentine, a martyred priest, who died in 270 A.D. After a contest in which the members had to guess

the names of 20 people shown to them in pictures, refreshments were served, which included a delicious Valentine cake baked by Nellie Dewar.

At the **Brownsburg** meeting it was noted that a member had received greetings from a western pen pal at Christmas, and a bus trip is being arranged for April. The members of **Lakefield** have decided to return to the custom of holding the meetings in the various homes. A new member was welcomed, as well as their new rector's wife, Jamily Santram, and their past-president Shirley Riddell, who was home for a visit.

The guest speaker for the **Arundel** meeting, Miss Anne Usher of the Quebec Status of Women was unable to come from Montreal due to illness, but will attend the April meeting. The public is invited to hear her speak on Quebec Law pertaining to Women's Rights.

Upper Lachute East End ladies are preparing to make an appliqued quilt and an auction of homemade or handmade articles was held.

Pioneer plans to sponsor two special prizes at the Lachute Spring Fair, a western shirt and an original lamp shade. A member displayed a lovely cloth that was hand dyed and hand woven as well as a tray made of copper that was hand crafted and designed. Some of the topics of the **Grenville** meeting were: Articles for the National and Provincial W.I. were discussed, a collection of books and magazines for the hospital undertaken, and it was considered that less elaborate lunches be served at the monthly meetings. **Kinnear's Mills** plan to hold a bake sale in Thetford Mines, and it was decided to send two gifts of maple products to the Convention. At the **Inverness** meeting a paper was read on Lecithin, a natural nerve food better to use than sleeping tablets.

The members of **Sawyerville** plan to serve a dinner at the Second Mile Senior Centre, and had a demonstration on cake decorating given by Mrs. Goode. At **East Angus** one member read an article entitled "The Contents of your purse reveal your personality," and to answer the roll call each member brought a comic book for an Eskimo child.

A member from **Bury** is writing the history of a pioneer member of the Women's Institute, also a copy of the History of Compton County WI was presented to St. Paul's Rest Home. **Brookbury** members are awarding prizes in penmanship to students from Pope Memorial High School, and **East Clifton** had a demonstration on crocheted flowers.

Some activities reported from **Richmond Hill**: (1) quilt given to a needy family because of a fire, (2) books belonging to the late Betty Mason were sold and the proceeds (\$278.90) were given to the Betty Mason Scholarship Fund at the Richmond Regional High School. The **Spooner Pond** branch reports that greeting cards, sold by Mrs. Stella Parkes, during the year brought in \$75. A macramé "shoe" was drawn on and the proceeds went to branch funds. Two scarves were brought to the meeting of **Richmond Young Women** for the FWIC Convention at Saskatoon. **Melbourne Ridge** and **Cleveland** held auctions to help pay for cheer boxes and cards. At **Gore** meeting, plans were made for a Year of the Child project.

Mrs. Reda Lewis, County President of Missisquoi was guest at both **Cowansville** and **Stanbridge East** meetings. For the program at the latter branch, the members brought the oldest thing from their homes and told about it. Some articles were: gunshot pouch and shot mould, candle mould, neck yoke, a sampler over 100 years old, and an old type picture. This proved very interesting. At **Fordyce** a fitting tribute was paid to our first Treasurer, Miss Guila Jones, a Charter Member, who had passed away in January. A memorial fund has been set up which will be used for education and science. A safety kit for the International Year of the Child has been sent in. Mrs. Gracia Comeau of the Richelieu Social Service Dept. had a very informative talk on the new senior citizens homes in Sutton and in Cowansville to be opening this spring. She stressed the need for more of these homes where Seniors will have the privacy of their own apartment as well as necessary care, if needed. To answer the roll call at the **Dunham** meeting, the members brought in a food item and a basket was packed for a needy person.

Mrs. K. White from **Abbotsford** writes: "Mrs. Marshall, Education Convener, read correspondence which she has had with the Bibliothèque Centrale in connection with the McLennan Travelling Libraries and the new set-up, with the possibility that in the future a new municipal library will be set up in Abbotsford. The members were asked to bring suggestions to the next meeting as to how we should celebrate our 50th anniversary.

At the February meeting of **Matagami**, the members considered having a poster competition for the Primary and Elementary students in both the English and French departments of the local school. Topics will be decided on and a letter sent out to both principals. The guest speaker for the evening was Mrs. Catherine Buesnel, a Grade 1 and 2 teacher at Galilée School. She is also one of the members on the Language Arts Development Committee for the Province of Quebec. Some things Mrs. Buesnel listed as being important for children are: good meals, rest, parents to listen to them, buy books and jig-saw puzzles as gifts. It is very important to accept your child as he or she is — don't try to make them into being somebody else. The 12 members and two guests enjoyed this meeting very much.

Two branches reported from Shefford County. The Agriculture Convener for **Granby Hill** spoke of Camille Laurin's visit to Cowansville and the ladies voiced some concern about Bill 116. The Education Convener of Waterloo-Warden spoke about student exchange between a school in Alberta and Alexander Galt Regional in Lennoxville. Two pairs of hand-knit socks will be sent from this branch to the National Convention in Saskatoon in June.

The Education Convener of **Aubrey-Riverfield** told of Quebec's first Armenian private school, recently opened in Montreal. Financed by the Armenian Community in North America, and helped by a grant from the Quebec Government, the school will teach English, French, and Armenian. The Citizenship Convener reported on the Governor General's installation. A spelling bee provided good entertainment.

At the **Dewittville** meeting a profes-

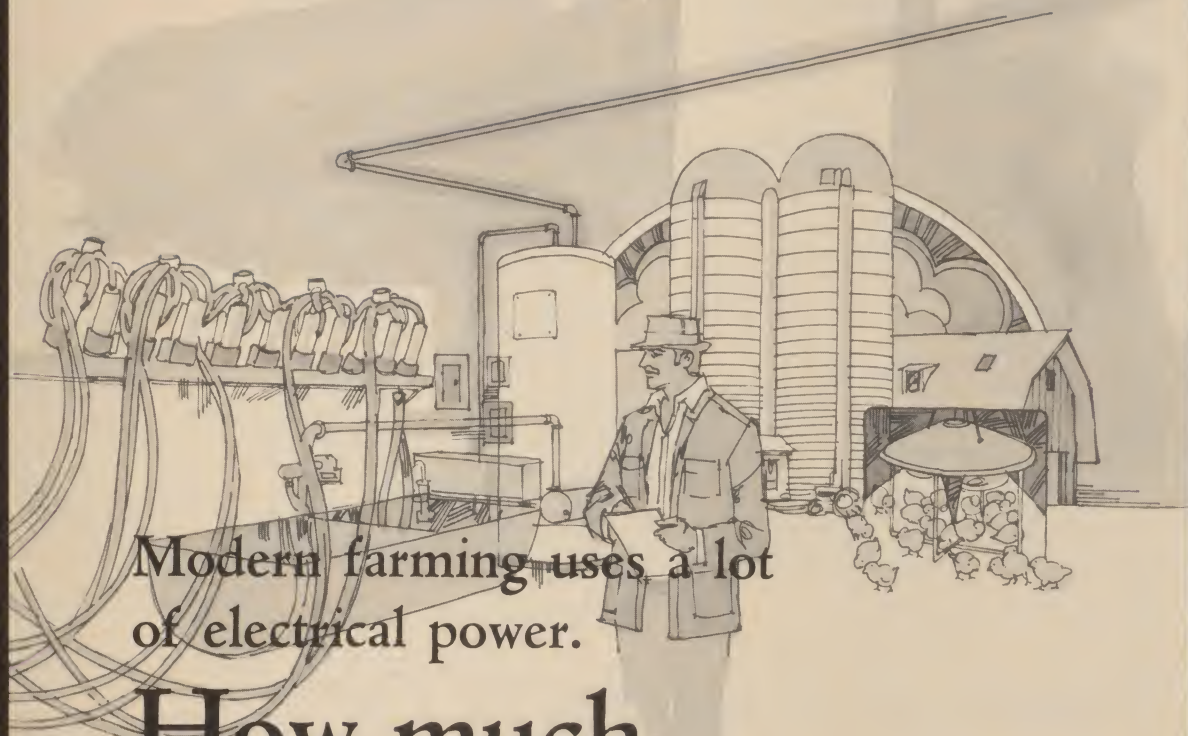
sional upholsterer gave WI members many valuable tips on the maintenance and care of furniture. A report was given on the January curling party and bar-b-q supper for members' husbands. Other subjects mentioned: tractor driving safety; St. Joseph's School to be rebuilt, and bran keeps gallstones away. At **Hemmingford** Mrs. W. Belair donated a walker to the institute for use in the Community. The history of this group has been updated and is being printed. At **Howick** each member brought in a Valentine and some cookies and a committee of three packed 40 attractive Valentine treats for shutins and friends. A penny fair resulting in \$42 added to the treasury. The special guest at the **Ormstown** meeting was Mr. James Barr, M.A. who showed beautiful slides of the Islands of the Caribbean. Mr. Barr gave an interesting commentary on Barbados, St. Lucia, Guadeloupe, and places up the Mexican coast.

Some roll calls reported: **Matagami**, name your favourite female author. **Abbotsford**, name a cereal and a grain contained in it. **Upper-Lachute East End**, tell a humorous incident in your life. **Clarendon**, tips on using your deep freeze. **Franklin Centre**, recall an event in the life of Queen Elizabeth. **Howick**, an interesting fact about Alberta.

More branches donating to the Butters' Home are: **Gore, Granby Hill, Brownsburg, East Angus** and **Howick**. **Waterloo-Warden** sent money to Waterloo School cafeteria for needy children, also **Gore** to the Cancer Society. **Frontier** donated to certificate 569, which is backed by UNESCO, and **Lakefield** to the Elementary School year book. **Aubrey-Riverfield** supported the Howick School Library, Landrover, Federated News, Cancer Research and Mentally Retarded.

Mottoes submitted are: **Cowansville**, Yesterday is a cancelled cheque; tomorrow is a promissory note; today is ready cash — use it. **Fordyce**, Pioneers had their tranquilizers — they called it work, and from **Kinnear's Mills**, Love endures only when the lovers love many things together and not merely each other. A fitting one for this February report.

Gladys C. Nugent
QWI Publicity



Modern farming uses a lot
of electrical power.

How much of it is wasted?

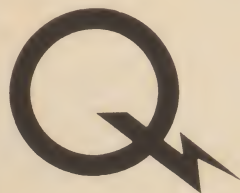
In agriculture as everywhere else, saving electricity is important.

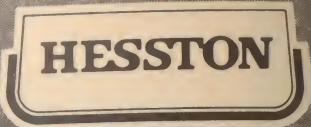

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Have you checked that doors and windows are tightly sealed? That's one place you can cut down on heat loss, waste of electricity and heating expenses.

You can limit your energy consumption by carefully examining your production and processing methods.

Make sure that electricity on your farm is used wisely and serves real needs. In this way you will contribute to the effort to reduce the waste of energy.




HESSTON


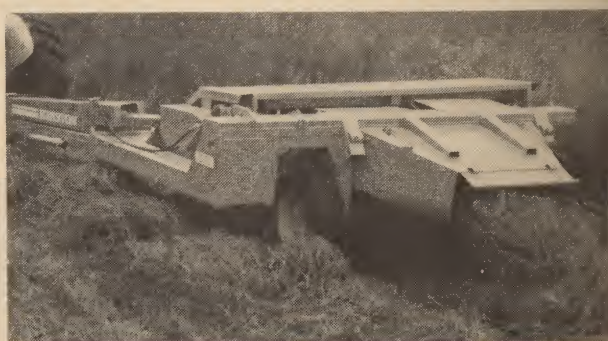
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Tractor requirements	- 2-3 plow
PTO	- 540 RPM
Bale size	- Width & height - 14" X 18"
	- Length - 12" to 50"
Pickup	Drum with 6-bar pick-up, 96 tines, channel-type strip-pers and windguard



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